CARDIOTHORASIC ASSESSMENT

HISTORY TAKING:

1. Chief Complaints

a. Cough
b. Chest pain
c. Breathlessness
d. Wheeze
e. Hemoptysis

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f. Expectoration

2. Family History

a. Asthma
b. TB
c. Hay fever
d. Eczema

3. Past History

a. TB
b. Influenza
c. Measles
d. Whooping cough
e. Diabetes
f. STD
g. HIV

4. Habits

a. Smoking
b. Alcohol
c. Tobacco

5. Allergy

Any kind of skin or respiratory tract allergy

EXAMINATION

1. General Examination
2. Local Examination

General Examination

- Built
- Nails for clubbing and cyanosis
- Conjunctiva for pallor and icterus
- Temperature
- BP
- Spine

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- Neck
- Any sinus tenderness
- Throat for tonsils
- Alae nasi

Local Examination:

Chest Evaluation: It is a procedure to assess the condition of the chest. It includes external deformities, density of underlying tissues, condition of lungs, etc.

Chest Evaluation involves the following procedures:

1. Palpation:
2. Percussion
3. Auscultation
4. Cough
5. Sputum
6. Vocal fremitus
7. Chest deformities
8. Chest measurements
9. Breath sounds and heart sounds

The thorax is made up of skeletal structure posteriorly, the dorsal portion of the ribs articulate with the 12 thoracic vertebrae at the costotransverse and costovertebral joints. Anteriorly, first to 7th ribs articulate directly with the sternum via the costal cartilage; Eight to tenth ribs have cartilageneous attachments to the rib above; eleventh and twelfth are floating ribs.

Palpation

(Symmetry of Chest Movement)

- Place your hands on the patient's chest and assess the excursion of each side of the chest during inspiration and expiration.

- To chest the upper lobe expansion, place the tips of your thumb at the midsternal line at the sternal notch. Extend your fingers above the clavicles. Have the pattern fully exhale and then inhale deeply.

- To check middle lobe expansion, place the tips of your thumbs at the xyphiod process and extend your fingers laterally around the ribs. Again, ask the patient to breathe in deeply.

- To check the lower lobe expansion; place the tips of your thumbs along the patient's back at the spinous process and extend your fingers around the ribs. Ask the patient to breathe in deeply.

- As the patient inhales and exhales, check the symmetry of movement of both sides of the chest.

- Depth of excursion: Measured by placing both hands on the patient's chest and back. Note the amount of space between your thumbs after the patient takes a deep inspiration.

Tactile Vocal Fremitus

- It is the vibration felt as a therapist palpates over the chest wall as a patient speaks.

- This procedure is used to assess the quantity of the underlying tissues.

Procedures

- Place the palms of your hands lightly over the chest wall and ask the patient to speak a few words or repeat '99' several times.

- Fremitus is increased in cases of secretions in airways and decreases or

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absent if air is trapped in obstructed airways.

- Fremitus is noted when there is increased density of underlying tissues and decreased or absent if fluid or air is present in pleural space.

- When vibrations are detected during quite breathing it is termed as RHONCAL FREMITUS.

Percussion

An evaluation technique designed to assess:

- Lung density
- Specifically air to solid ratio in the lungs

Procedure:

- Place the middle finger of the non-dominant hand flat against the chest wall along an intercoastal space.
- With the tip of the middle finger of the opposite hand tap firmly on the finger positioned on the chest wall.
- Repeat the procedures at several points on the right and left and anterior and posterior aspects of the chest wall.
- This manoeuvre produces a resonance; the pitch varies with the density of the underlying tissue.
- The sound will be dull and flat if there is a greater than normal amount of solid matter (tumour, consolidation) in the lungs in comparison with the amount of air.
- The sound will be hyperresonant (tympanic) if there is a greater than normal amount of air in the area (as in patient with emphysema).
- If asymmetrical or abnormal findings are noted, the patient should be referred to the physician for tests and x-rays.
- While practising percussion always compare the corresponding area of the opposite side.

Auscultation

Listening to sounds within the body, specifically to breathe sounds in an evaluation of the lungs.

Respiratory Conditions:

- Breath sounds
- Added sounds
- Vocal resonance

Breath Sounds:

- Vesicular
- Bronchial
- Broncho vesicular

Vesicular

- Means the length of expiration is one third that of inspiration.
- There is no gap between expiration and inspiration and it is rustling in character.
- Heard all over the chest.

Bronchial

- Inspiration is equal to that of expiration.
- There is a gap in between expiration and inspiration and it is hollow in character.
- These are of three types:
  - Tubular: Heard in cases of pneumonia
  - Cavernous: Present in irregular wall cavity as occurs in fibrocavitory lesion

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of tuberculosis.

○ Amphoric: Present in smooth, thin walled large cavities as in bronchopleural fistulas.

Broncho Vesicular

- Inspiration is equal to expiration but there is no gap present in between.
- Seen in patients of chronic obstructive pulmonary diseases and chronic asthma.

Added Sounds

- Rhonchi
- Crepitations

Ronchi

- Whistling sounds, there are heared when air underpressure had to pass through a narrow bronchus.
- Bilaterally present in bronchial arthma, COPD, pulmonary embolism, etc.
- Localised present in foreign body inhalation, mucous plug, etc.
- Rhonchi without stethoscope if heared is known as WHEEZE

Crepitations

- Crackling sounds
- These can be either fine or coarse.
- Coarse can be heard in bronchiectasis also known as leathery crepitations.
- Fine crepittions are heard at bases of lung in congestive cardiac failure.
- Coarse crepitations are respiratory in origin due to air flowing.
- Fine crepitations are cardiac in origin due to blood flow.

Heart Sounds

- The act of listening the sounds within the body is known as auscultation and it is usually done with a stethoscope.
- The sound of heart-beat comes primarily from blood turbulence caused by closing of the heart valves during each cardiac cycle. Four heart sounds are generated.
- The first two sounds are loud enough to be heard by listening through a stethoscope.
- The first sound S_1, which can be described as "lubb" sound is louder and a bit longer than the second sound.
- The sound is created by blood turbulence associated with the closure of the AV valve so on after the ventricular systole begins.
- The second sound i.e., S_2, which is shorter and not as loud as the first can be described as "Dubb" sound.
- This is caused by blood turbulence associated with closure of semilunar valves, the beginning of ventricular diastole.
- In a person at rest the time between S_2 and next S_1 is about two times longer than the time between $S_1 + S_2$ within a septa.

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Cough

Expulsion of secretion from airway. It is the primary means of cleaning the 1st to 7th generation of airway and foreign body.

- Forced expiration against a closed epiglottis.
- This causes a rise in intrathoracic pressure as the glolttis opens there is a difference in pressure between the smallest airways and the upper trachea causing a rapid flow of air.
- The rapid flow contained with the narrowing of the airways increases the force of the air which dislodges mucous and foreign particles into the pharynx.

Evaluation is done under following headings:

- Any change in type
- Frequency of cough
- Duration or timing of cough

Causes of Cough:

- Inflammation
- Secretions
- Foreign bodies
- Chemicals
- Intrabronchial masses

Sputum

Secretions of mucous membrane and cillliary cells. Its main function is to limit foreign body entry to body. This is increased during irritation, because of gravity it goes to lung and settles and then according to condition changes.

Evaluation of sputum

1. Colour:

- Normal colour is clear, transparent.
- Grey or black colour in smokers and people living in pollution.
- Yellow coloured if pus is present.
- Seen in lobular pneumonia
- If infection increases may be of green colour.

2. Quantity:

- Increases with increase in infection and irritation.

3. Viscosity / Consistency:

- Viscous
- Thin
- Frothy
- Increases in chronic lung diseases.
- Sometimes becomes thick like stone.

4. Blood:

- Presence of blood shows haemoptysis as in case of bronchiectasis.

INSPECTION

These are of two types:

a. Congenital
b. Acquired

Congenital Chest Deformities

a. Pectus carinatum
b. Pectus excavatum

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Acquired Chest Deformities

a. Barrel chest
b. Kyphosis or scoliosis
c. Asymmetry due to impaired movement from an underlying chest disease.

To evaluate the conditions

a. Pectus Carinatum (pegion chest)

- Sternum projects forward
- Coastal cartilage and rib cage bulge outside and chest is held prominent.
- Seen in childhood asthma.

b. Pectus Excavatum (funnel chest)

- Inward position of lower rib cage.
- There is inturning of costal cartilages and from depression of varying degree.

c. Barrel Chest

- Anterior posterior and lateral dimensions are increased.
- The circumference of upper chest is larger than lower.

d. Kyphosis or Scoliosis

- This posture is characterised by an increased thoracic curve, protracted scapulae and usually an accompanying forward head.

Chest Measurement

- Measurement of expansion of chest is known as chest measurement of various levels.

- It is to measure the expansion of chest .Due to disease, inspiration is decreased and thus expansion decreases.

- Chest expansion decreases in

Measurement is taken at 3 levels	Normal expansion at these levels
1. 4th costal cartilage (axilla) nipple level	2 – 3 cms
2. 7th costal cartilage (xiphisternum level)	5 – 7 cms
3. 9th costal cartilage (anterior end of 9th costal cartilage)	7 – 9 cms

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C) CARDIOTHORACIC

Duration of condition: acute/subacute/chronic

History of present illness: _____

Past medical history: _____

ADL activities: _____

Personal history: _____

Social & family history: _____

Case history: _____

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On observation:

Built of the patient: _____

Cyanosis: central/peripheral _____

Breathing pattern: _____

Depth: _____

Type: _____

Use of accessory muscle: _____

Chest symmetry: _____

Facial expression: _____

Assessment of chest pain:

Site/side of pain: _____

Type of pain: _____

Mode of onset of pain: gradual/rapid: _____

Nature: shooting or dull pain: _____

Course:

radiation if any _____

towards left/right UL _____

Intensity of pain: constant or intermittent: _____

Aggravating/relieving facors: _____

On palpation:

Oedema: pitting or non-pitting: _____

Inflammatory signs: present or absent: _____

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Wasting of muscles: _____

Tracheal shift: _____

Percussion:

Resonance: normal/hypo/hyper _____

Cardiac dullness: _____

Liver dullness: _____

Spleen dullness: _____

Shifting dullness: _____

Coin test: _____

Auscultation:

Heart sounds: _____

Gallop: _____

Breath sounds: _____

Tactile vocal fremitus: _____

Pleural rub: _____

Abnormal lung sounds if any: _____

Investigations:

X-rays: _____

Sputum examination: _____

ECG: _____

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Echocardiography: _____

Pulmonary function test (spirometry): _____

Stress test: _____

Scanning: _____

On examination:

Pulse rate: _____

Respiratory rate: _____

Temperature: _____

Blood pressure: _____

Measurements:

Chest expansion: _____

Spirometry: _____

Dyspnoea level: _____

Posture: _____

Deformity: _____

Chest: _____

Spinal: _____

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Echocardiography: _____

Pulmonary function test (spirometry): _____

Stress test: _____

Scanning: _____

On examination:

Pulse rate: _____

Respiratory rate: _____

Temperature: _____

Blood pressure: _____

Measurements:

Chest expansion: _____

Spirometry: _____

Dyspnoea level: _____

Posture: _____

Deformity: _____

Chest: _____

Spinal: _____

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